MCS

Miniature Collimating Sight

USER'S MANUAL

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SAFETY SUMMARY

Before operating this product, study carefully this Manual.

Armasight MCS Miniature Collimating Sight is a precision electro-optical instrument and requires careful handling. To avoid physical and equipment damage when using the MCS, follow all WARNINGS, CAUTIONS and NOTES.

Definition of the following alerts throughout this Manual:

WARNING — Identifies a clear danger to the person operating the equipment.

CAUTION — Identifies risk of damage to the equipment.

NOTE — Serves to highlight essential procedures, conditions, statements, or convey important instructional data to the user.

WARNING:

When installing the equipment on a weapon, be sure the weapon is CLEAR and SAFE-ON before proceeding.

CAUTION:

Do not dismantle the equipment.

Keep the equipment clean. Protect it from moisture, sharp temperature drops and shocks.

DO NOT over-adjust the controls by forcing them beyond their end of travel.

DO NOT leave the equipment switched on during stops in operation.

Do not store the equipment with the battery still in it.

Dry thoroughly each item before replacing into the storage carton.

NOTES:

Zero the weapon prior to installation and boresight adjustment of the MCS.

We provide the information in this manual for the introduction purpose only. The contents may undergo further changes with no commitment by Armasight to keep customers notified about the same.

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1. DESCRIPTION AND DATA

1.1 DESCRIPTION

The Armasight MCS (Miniature Collimating Sight) is a micro-LED collimating sight ideal for "both-eyes open", rapid-target acquisition. The MCS is rugged, lightweight, and is designed to mount onto many existing optics as well as MIL-STD-1913 Picatinny and Weaver-style rails.

The Armasight MCS is the only sight in its class and on the market that features a dual-reticle pattern. The user can select a 3.5 MOA "Dot" reticle or a 20 MOA "Ring" reticle pattern, depending on mission requirements. The MCS is compatible with night vision devices of all generations. Reticle intensity is regulated by an automatic brightness control sensor, which can be overridden by the user and turned to maximum brightness mode if required.

The MCS is designed to significantly improve the accuracy and efficiency of virtually any weapon, from handguns and pistols to assault rifles and light machine guns. The compact size and versatility of the MCS make it an ideal secondary or backup optical sight. Accurate and reliable, the Armasight MCS features 1.2 MOA/click windage and 1.5 MOA/click adjustments. A unique optical design allows for a parallax-free, "always on the center" reticle.

The MCS is waterproof; it has been tested against salt fog, dust, and vibration. It has been drop-tested and mounted on a variety of firearms as they fired thousands of rounds. The Armasight MCS complies with MIL-STD 810 G standards. The MCS features a unique pivot lens cover that has anti-reflective coating, and it works on a single, easy to replace CR2032 3V battery.

1.2 KEY FEATURES

- **Tactile click stops for windage & elevation adjustments**
- **A switchable 3.5 MOA dot to 20 MOA ring reticle pattern**
- **Automatic brightness control of the reticle based on the target area brightness**
- **Rapid target acquisition**
- **True night vision compatible mode**
- **User configurable open or tube sight mode**
- **Riflescope mounted or weaver mounted variations**
- **Battery change with no change in zero**
- **Large heads-up display with wide field of view**

- **Parallax-free performance**
- **Submersible in up to 10m (33 ft) of water**
- **Push-button controls for reticle switching, manual override of auto brightness, night vision mode, and on/off function**
- **Anti-reflective coatings on lens covers, to maintain covertness**
- **Limited Two-Year Warranty**

1.3 SPECIFICATIONS

Magnification	1x
Exit Pupil	20x15 mm
Eye Relief	from 100 to 500 mm
Parallax (at 100 m)	less than 0.5 MOA*
Windage & Elevation Adjustment Range	±1.5°
Windage Adjustment Accuracy	1 click=1.5 MOA (45 mm at 100 m)
Elevation Adjustment Accuracy	1 click=1.2 MOA (36 mm at 100 m)
Reticle Pattern Configuration	Red Dot / Circle (interchangeable)
Reticle Pattern Size: - Dot - Circle	 3.5 MOA (10 cm at 100 m) 20 MOA (60 cm at 100 m)
Reticle Brightness Adjustment	Auto / Manual (MAX or MIN positions)
Power Supply	3V Lithium Battery (CR2032)
Battery Life (with Dot Pattern): - at MIN Brightness Mode - at MAX Brightness Mod	 20 000 hours 250 hours
Operating Temp	from -40°C to +50°C
Waterproof	10 m for 1 hour
Mounting System	for Picatinny Rail or for ACOG 4x32 (Trijicon) riflescope
Dimensions	48x40x47 mm (ver. for Picatinny rail) 48x44x52 mm (ver. for ACOG 4x32)
Weight	65 g

* MOA = Minute of Angle

1.4 LOCATION OF MAJOR COMPONENTS

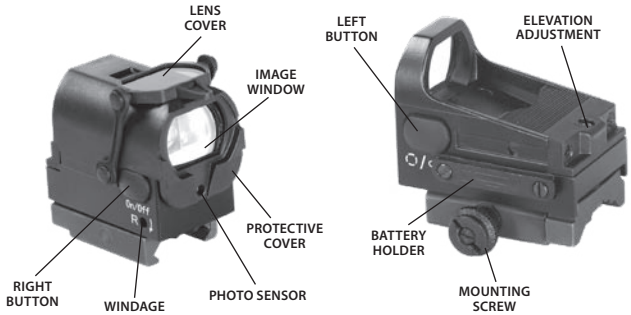

Figure 1. MCS Components

2. SAFETY, CARE AND HANDLING

WEAPON SAFETY: Prior to mounting the MCS on your weapon, verify that the weapon is cleared. If you are not sure how to clear your weapon, please see the accompanying operator's manual for the weapon platform that you using to mount the sight.

FCC COMPLIANCE: The MCS complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference; and, (2) this device must accept any interference received, including interference that may cause undesired operation.

When a sudden increase in resistance is felt in the elevation or windage adjustment shafts, the end of the adjustment range has been reached. **Do not turn the adjustments any farther or serious damage may occur to the sight.**

Never clean the glass surface with a dry cloth or paper towel; always dampen the glass surfaces prior to cleaning.

All moving parts of the sight are permanently lubricated. Do not try to lubricate them.

Do not use deteriorated or corroded batteries. Inspect batteries for rips, tears, dents, or cuts in their casing. If you find any leakage on the battery, it could adversely affect operation of the sight.

3. OPERATING PROCEDURE

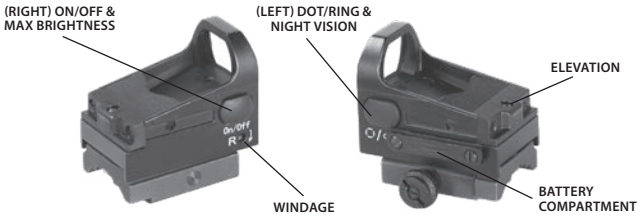

Figure 2: MCS

ON/AUTO BATTERY CHECK: Pressing and releasing the right button will turn the sight on in auto-brightness mode. If the battery has less than 10% power remaining, the reticle will blink after the sight powers on. If the reticle blinks, the battery should be replaced. The battery condition can be checked at any time by powering off and then immediately powering on the unit.

OFF: While the sight is on, pressing and releasing the right button will turn the sight off.

AUTO-BRIGHTNESS OVERRIDE: Pressing and holding the right button for two (2) seconds will place the reticle in MAX brightness mode. This mode can be used to override the auto-brightness function, in case the photo sensor becomes damaged or blocked. To return to auto-brightness mode, press and hold the right button for two (2) seconds.

CHANGING BETWEEN RETICLE PATTERNS: Pressing and releasing the left switch will toggle the reticle pattern from a 3.5 MOA dot to a 20 MOA ring. The 20 MOA ring allows for faster target acquisition in CQB (close-quarters battle) conditions, while the 3.5 MOA dot allows for greater precision when shooting at longer-range targets.

Figure 3: Reticle Patterns

NIGHT VISION MODE: The MCS is compatible with Generation II, III, III+ and IV+ Night Vision Devices. In the night vision mode, the reticle brightness is low enough that when viewed with a night vision device, the reticle image does not bloom.

To activate night vision mode, turn the sight on. Once the sight is on, press and hold the left button for two (2) seconds. The reticle can now be seen when a night vision device is placed behind it. To exit night vision mode, press and hold the left button for two (2) seconds; the sight will return to daytime operating mode.

POWER CONTROL: Maximum brightness, used in conjunction with the manual override of all automatic controls and the 20 MOA ring mode, uses more power than the auto-brightness 3.5 MOA dot mode. To maximize battery life, the MCS will automatically switch to 3.5 MOA dot auto-brightness mode after 20 minutes of inactivity when in 20 MOA or max-brightness mode.

REPLACING THE BATTERY: If the reticle flashes after the sight is turned on, the battery should be replaced. To remove the old battery, loosen the two flathead screws on the battery compartment using a small flathead screwdriver or a similar tool. Pull the battery compartment out. To avoid losing the screws, do not remove them completely. Remove the old battery from the compartment and replace it with a new CR2032 battery, with the negative end facing up (as shown on the side of your sight). Replace the battery compartment and tighten the screws until they are secure. **Do not over-tighten the screws.**

Figure 4. Replacing the Battery

PROTECTIVE LENS COVER: The MCS is equipped with a protective lens cover that is necessary for several reasons; the cover provides protection for the lens and laser diode, keeps the optical path free of debris, and prevents unwanted light from obscuring the sight's image and reticle.

The cover has three configurations. When the sight is not being used, a tab on the lens cover blocks the photo sensor. This matches the sight in darkness, which prolongs battery life and protects the lens while it is not in use (see Figure 5A).

In its normal operating mode, the lens cover is placed on the top of the

protective cover. This allows for a clear view through the sight's window, and restores the auto-brightness function (Figure 5B).

If the target background is extremely bright (i.e., glare bouncing off of the ground, as is common in desert and wet environments), the lens cover acts as a light filter. In this configuration, the tab on the lens cover is flipped up to allow the photo sensor to function properly (Figure 5C).

The protective cover is plastic and snaps onto the MCS. No special tools are required to install or remove this cover. When the cover is removed, the sight can be used as a normal, open sight.

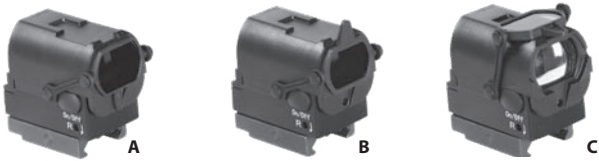

Figure 5: MCS with Protective Housing
A - filter in place, sensor covered; B - sensor uncovered; C - filter off

4. MOUNTING INSTRUCTIONS

The Armasight MCS comes in two versions (models): one with a mount for a standard Picatinny rail (optical axis height is equal to 38 mm); and a second one that can be mounted onto an ACOG 4x32 (Trijicon) riflescope (optical axis height is equal to 47 mm). For your convenience, the Armasight MCS can be mounted the collating sight onto a weapon without any specialized adapters.

4.1 MOUNTING ONTO A PICATINNY RAIL

The Armasight MCS Picatinny mount model can be attached to the M16/ M4 Picatinny-style rail. To do this, loosen the horizontal fixation screw. Place the scope onto the Picatinny rail, and verify that the mount aligns with the rail. Re-tighten the horizontal fixation screw (Figure 6).

Figure 6. Picatinny Mount

4.2 MOUNTING ONTO AN ACOG 4X32 (TRIJICON) RIFLESCOPE

The Armasight MCS ACOG 4x32 (Trijicon) riflescope model has two brackets with screw-holes, to be used when mounting the sight onto an ACOG 4x32 body (rather than the Iron Backup Sights). Place the Armasight MCS onto the ACOG 4x32 body as shown in the picture to the right. Screw the two set screws (included) in tightly with a flathead screwdriver (Figure 7).

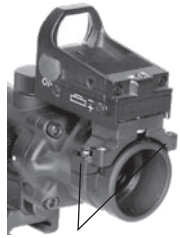

Figure 7. ACOG Mount

CAUTION:

Before mounting or testing the MCS, verify that your gun is not loaded. **Always use proper gun safety and handling procedures.**

5. ZEROING PROCEDURES

The MCS features click mechanisms for elevation and windage adjustments. The adjustment mechanisms are grooved and require a small screwdriver or similar tool to turn them. For both elevation and windage, each click will change the bullet's point of impact 1.5 Minutes of Angle (MOA), 3/4 inch at 50 yards, or 1.5 inches at 100 yards. To move the point of impact **UP**, turn the elevation adjustment counterclockwise. To move the point of impact to the **RIGHT**, turn the windage adjustment clockwise.

The MCS elevation and windage adjustments are factory collimated so that the bore of the rifle is parallel to the mounting rail. The sight should be close to mechanical zero when mounted on a properly installed rail. Do not turn the adjustments before mounting the sight on the firearm. Be sure to check that the mount and sight are securely mounted after the initial firing.

If you encounter an increased level of resistance in the adjustments, the end of the adjustment range has been reached. DO NOT turn the adjustments any farther, as this may cause serious damage to the sight.

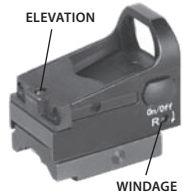

Figure 8.
Elevation & Windage Adjustment

6. OPERATOR LEVEL MAINTENANCE

The operator is limited to replacing battery, as well as cleaning the battery compartment and outer housing surfaces of the sight.

6.1 REPLACING BATTERIES

See 'Replacing the Battery' on page 6. **Do not use deteriorated or corroded batteries.** Inspect batteries for rips, tears, or cuts in the housing. If there is any leakage on the battery casing, it could adversely affect operation of the sight.

6.2 CLEANING INSTRUCTIONS

1. The optical system and the window are coated with anti-reflective material. When cleaning the glass surfaces, you must first blow away any dirt and dust. Fingerprints and lubricants can be wiped off with lens tissue or a soft cotton cloth that has been moistened with professional lens cleaner or glass cleaner; both are sold in most camera stores. Never clean the glass surface with a dry cloth or paper towel; always dampen the glass surfaces prior to cleaning.

2. No maintenance is needed on the sight's surface, although you may occasionally want to wipe it off with a soft cloth. Only use water-based cleaners, such as regular glass cleaner, ammonia, or soap and water. Never use any solvent-type cleaners such as alcohol or acetone. Do not use gun cleaner to clean or lubricate the Collating Sight.

3. All moving parts of the sight are permanently lubricated. Do not try to lubricate them.

4. Never disassemble the sight's optical assembly! Disassembly will **void the warranty** and damage the sight.

6.3 CLEANING

To clean the unit's exterior, brush off surface dirt or sand with a soft brush to avoid scratching the paint. Wipe the unit down with a damp cloth to remove all remaining grime, followed by a dry cloth to remove moisture. For further protection against dirt and dust, use a silicon-treated cloth to wipe the outside of the unit (be careful not to touch any of the optical lenses).

The optics can be cleaned using an optical quality lens tissue (similar to those used to clean glasses or binoculars). The brightness sensor should also be regularly cleaned with optical tissues.

7. TROUBLESHOOTING

Common problems that may occur with your MCS or the detection and viewing tests, as well as actions you can take to correct them, are listed in the Troubleshooting Table, below. This table does not list all of the malfunctions that may occur with your device. If you experience a malfunction that is not listed on this table, please contact Armasight or your MCS retailer

NOTE:

Before you use this table, be sure that you have performed all normal operational, safety, care and handling checks and procedures. If you experience a malfunction that is not listed in this table, notify Armasight or your MCS retailer.

TABLE 1. TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	ACTION
The sight will not power up.	The batteries are not installed properly.	Ensure that the battery has been inserted properly according to the diagram on the side of the battery compartment.
	Damaged or low batteries.	Replace the battery with a new, unused battery that is fully charged.
If these actions fail, please contact Customer Support.		
The reticle is fuzzy/ has a 'halo' effect.	If the sight is in maximum brightness mode and is being viewed against a dark background, undesired reflections may be seen due to the nature of the technology. Max brightness mode is not intended for use in poorly lit conditions, as it may obscure the target.	Ensure that the sight is in auto-brightness mode. Turn the sight off, and then back on, or press and hold the right button for 2 seconds.
If the problem persists, please contact Customer Support.		

PROBLEM	POSSIBLE CAUSE	ACTION
The reticle is flashing or is flashing on and off; the unit turns off during recoil.	This may be caused by damaged or low batteries.	This is the low battery indicator. Replace the batteries.
		If the batteries are low, a high recoil weapon platform can cause the reticle to flash on and off, even before the low battery indicator takes effect. Replace the batteries.
		Replace the standard batteries with a brand name version, such as Sanyo CR2032. These have proven to be the most effective in withstanding a consistent amount of recoil. Many brands of batteries deteriorate faster than others, and can result in these failures.
If the problem persists, please contact Customer Support.		
The elevation will not zero; there appears to be insufficient travel.	This may be caused by the mounting set screws being tightened too much or host optic interference.	Remove the MCS from the host optic and remount per section 2.2 of this manual.
If the problem persists, please contact Customer Support.		
The sight is on, but the reticle is not visible in auto-brightness mode.	This may be caused by the photo sensor being blocked or covered.	Ensure that the photo sensor is clear of debris, and is not blocked or obscured.

8. WARRANTY INFORMATION

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of two (2) years from the date of purchase. In the event that a defect covered by the below warranty occurs during the applicable period stated above, Armasight, at its discretion, will either repair or replace the product; such action on the part of Armasight shall be the full extent of Armasight's liability, and the Customer's sole and exclusive reparation. This warranty does not cover a product if it has (a) been used in ways other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer or by any party other than Armasight without prior written consent of Armasight; (d) special order or "close-out" merchandise or merchandise sold "as-is" by either Armasight or the Armasight dealer; or (e) merchandise that has been discontinued by the manufacturer and either parts or replacement units are not available due to reasons beyond the control of Armasight. Armasight shall not be responsible for any defects or damage that in Armasight's view are a result from the mishandling, abuse, misuse, improper storage or improper operation of the device, including use in conjunction with equipment that is electrically or mechanically incompatible with, or of inferior quality to, the product, as well as failure to maintain the environmental conditions specified by the manufacturer.

ARMASIGHT PRODUCT WARRANTY REGISTRATION CARD

PRODUCT INFORMATION

Product Name _____ Purchased Form _____

Purchase Date _____ Product Serial # _____

CUSTOMER INFORMATION

Name _____

Address _____

City _____ Country _____ Zip _____

Day Phone # _____ Home Phone # _____

E-mail address _____

Customer Signature Required

This warranty is extended only to the original purchaser. Any breach of this warranty shall be enforced unless the customer notifies Armasight at the address noted below within the applicable warranty period.

The customer understands and agrees that except for the foregoing warranty, no other warranties written or oral, statutory, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, shall apply to the product. All such implied warranties are hereby and expressly disclaimed.

LIMITATION OF LIABILITY

Armasight will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages or liabilities arising out of the use of this product. Operation and use of the product are the sole responsibility of the Customer. Armasight's sole undertaking is limited to providing the products and services outlined herein in accordance with the terms and conditions of this Agreement. The provision of products sold and services performed by Armasight to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of or creating any obligation toward any third party of legal entity outside Armasight and the Customer; Armasight's obligations under this Agreement extend solely to the Customer. Armasight's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to Armasight by the customer or customer's dealer. Armasight shall not, in any event, be liable for special, indirect, incidental, or consequential damages, including, but not limited to, lost income, lost revenue, or lost profit, whether such damages were foreseeable or not at the time of purchase, and whether or not such damages arise out of a breach of warranty, a breach of agreement, negligence, strict liability or any other theory of liability.

PRODUCT WARRANTY REGISTRATION

In order to validate the warranty on your product, Armasight must receive a completed Product Warranty Registration Card for each unit, or the Customer can complete a warranty registration on our website, at www.armasight.com. Please complete the included form and immediately mail it to our Service Center:

Armasight, Inc.,
815 Dubuque Avenue, South San Francisco, CA 94080, United States of America

OBTAINING WARRANTY SERVICE

To obtain warranty service on your unit, the End-user (Customer) must notify the Armasight service department via email. Send any requests to service@armasight.com to receive a Return Merchandise Authorization number (RMA). When returning any device, please take in the product to your retailer, or send the product, postage paid and with a copy of your sales receipt, to Armasight Corporation's service center at the address listed above. All merchandise must be fully insured with the correct postage; Armasight will not be responsible for improper postage or merchandise that becomes lost or damaged during shipment. When sending product back, please clearly write the RMA# on the outside of the shipping box. Please include a letter that indicates your RMA#, the Customer's Name, a Return Address, reason for the return, Contact information (valid telephone numbers and/or an e-mail address), and proof of purchase that will help us to establish the valid start date of the warranty. Product merchandise returns that do not have an RMA# listed may be refused, or a significant delay in processing may occur. Estimated Warranty service time is 10-20 business days. The End-user/ Customer is responsible for postage to Armasight for warranty service. Armasight will cover return postage/ shipping after warranty repair to the End-user/ Customer only if the product is covered by the aforementioned warranty. Armasight will return the product after warranty service by domestic UPS Ground service and/ or domestic mail. Should any other requested, required or international shipping methods be necessary, the postage/ shipping fee will be the responsibility of the End-user/ Customer.

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